DOCUMENT RESUME

ED 264 252 TM 850 545

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TITLE Evaluation of a Statewide Staff Development Network.
PUB DATE Mar 85
NOTE 17p.; Paper presented at the Annual Meeting of the American Educational Research Association (69th, Chicago, IL, March 31-April 4, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Literacy; *Continuing Education Centers; Higher Education; *Inservice Teacher Education; Mathematics Education; *Program Evaluation; Public Policy; Science Education; *Staff Development; *State Programs
IDENTIFIERS *California; Investment in People Program; *Teacher Education and Computer Centers

ABSTRACT

Findings from an evaluation of Teacher Education and Computer (TEC) Centers were presented. The California State Legislature authorized 15 TEC Centers to provide staff development services to teachers and administrators. Evaluation of the Centers focused on several policy issues in order to describe the major accomplishments of TEC Centers on a statewide basis, as well as to characterize some of the activities of individual centers. Four issues were identified for the evaluation through discussion with TEC Center directors and with legislative staff: (1) the mission and resources of the TEC Centers; (2) services and training provided, (3) staff development strategies and models used; and (4) the TEC Centers as a regional staff development network. Sources of information included site visits, telephone interviews, staff interviews, surveys, and document analysis. In addition, information was obtained from a comprehensive database in which individual centers record all training provided. During the year, the TEC Centers offered a total of 2,466 courses representing a total of 28,711 training hours. There were 68,726 participants in training courses. The greatest portion of training activity was devoted to computer use, and the second greatest portion was devoted to the area of instruction or teaching methodology. (LMO)

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EVALUATION OF A STATEWIDE STAFF DEVELOPMENT NETWORK

Presented at the
American Educational Research Association Annual Meeting
April 1, 1985

by

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TM 850 545

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A variety of staff development programs have operated concurrently in California over the past 10 to 15 years. Two years ago, the State Legislature authorized and funded 15 Teacher Education and Computer (TEC) Centers to provide staff development services to teachers and administrators. Staff development resources are required to be provided in all areas of the curriculum, but especially in math, science, technology, and other curriculum areas for which there are significant shortages of qualified, certificated teachers. The TEC Center initiative was intended to incorporate earlier staff development programs into a single statewide system. While the mission is broad and complex, the overall intent is to provide some coherence to the content and delivery of staff development while at the same time allowing for considerable regional flexibility.

In this paper, findings from an evaluation of the TEC Centers conducted during 1983-84 will be presented. The evaluation focused on several policy issues in order to describe the major accomplishments and challenges of the TEC Centers on a statewide basis as well as to characterize some of the activities of individual centers. The importance of this evaluation rests not only on its time lines in relation to the implementation of the TEC Center initiative, but also on the significance of the TEC Centers themselves as a highly visible component of the educational reform movement in California.

The Mission of the TEC Centers

The TEC Centers were created as part of former Governor Brown's Investment in People Program and were originally established and funded in the Budget Act of 1982-83. Reflecting the focus of the Investment in People

Program, the Budget Act required that two-thirds of local TECC funding support improved mathematics and science education. The codified authorization of the TEC Centers in SB 813 removed the stipulation of a specific amount or portion of TECC funds for mathematics and science staff development but retained an emphasis on staff development resources in "mathematics, science, technology, and other curriculum areas for which there are significant shortages of qualified, certificated teachers." In addition to math, science, and computer education, the TEC Centers are charged with providing staff development for teachers and administrators across the curriculum including reading, writing, humanities, and the arts.

The emphasis on computer education is integral to the TECC mission. The Investment in People initiative made a strong case for upgrading the computer use skills of California students since future life-styles will be heavily influenced by the computer. Computer literacy training for both teachers and students was identified as a way to meet this need.

Each TEC Center was made responsible for the staff development functions formerly addressed by two preexisting staff development agencies, the Professional Development and Program Improvement Centers and the School Resource Centers. These functions include training in elements of effective instruction and provision of resources to build school site capacities for self-sustaining staff development.

Another aspect of the TECC mission is the integration of the direct training function with a capacity-building function. The TEC Centers must be responsive not only to short-term staff development needs by making appropriate training resources available, but also to the long-term need to empower local staff to plan and conduct their own staff development programs. During the

past year, the TEC Centers assumed responsibility for the administration of a program providing small grants to schools for their own staff development activities (AB 551 of 1977).

The goal of creating partnerships between the TEC Centers and other staff development providers, Institutions of Higher Education (IHEs), and with the private sector is another important part of the TECC mission. SB 813 stipulates that local TEC Center governing boards (policy boards) have at least one representative from IHEs and from business and industry.

In-service training for elementary and secondary teachers has historically been provided though individual enrollment in postsecondary courses in IHEs. Connections to the teaching process and sustained relationships for improved instruction were presumed but rarely played out. The TEC Centers were encouraged from their inception to develop closer cooperative relationships with IHEs. The TEC Centers were located to reflect the general attendance areas of the California State University system.

Decision authority over each TEC Center is shared by regional policy boards and executive boards, but the legislation also gives the State Department of Education (SDE) a strong overall leadership role in the TECC program. Each TEC Center is given the charge of coordinating a major portion of all staff development activities within each region and particularly to mobilize and coordinate staff development resources and activities in colleges and universities and in business and industry.

Organization and Governance of the TEC Centers

TEC Centers are governed by policy boards, composed of a majority of teachers. Policy boards work with TECC staff to set service priorities and to oversee TECC functions. Policy boards also have the responsibility, with

the concurrence of the county office of education acting as the local education agency (LEA), to adopt a center budget and plan and to select center staff. County superintendents in each designated TECC region select one of their county offices as the LEA to house the TECC operations. In regions where there are multiple county offices, the superintendents have the option of establishing an executive board to serve as a forum for resolving problems and reviewing policy issues.

The Superintendent of Public Instruction has final authority for the TEC Center program. Responsibilities of the Superintendent and the SDE include designation of the TECC regions with the advice of county superintendents, approving center plans and authorizing allocation of funds to the centers, facilitating communication among the centers, and evaluating the effectiveness of the centers. The Superintendent also has the authority to set aside money from the total TECC allocation to fund exemplary projects and support services.

TEC Center funding is based on an average daily attendance (a.d.a.) formula, and for 1983-84 included a basic operating budget ($205,000) and a regional geographic adjustment. The 1983-84 statewide budget for the TECC program was $6.68 million. Of this total, $6.04 million was allocated to the centers. The remainder was reserved to support a software clearinghouse and a math retraining project. Profiles of the 15 TEC Centers portraying their diversity are shown in Table I. Figure 1 depicts the approximate number of teachers within each TECC region.

Insert Table I about here

Insert Figure 1 about here

Study Purpose and Methods

This paper describes the major accomplishments and challenges of the TEC Centers at this time and suggests the type of additional support and resources that are needed for the centers to meet the challenges. It provides information on the status of staff development activities of the TEC Centers, including the number and type of training and services provided.

Four issues were identified for the evaluation through discussions with TEC Center directors and with legislative and SDE staff. These issues were: (1) the mission and resources of the TEC Centers; (2) services and trainings provided by the TEC Centers; (3) staff development strategies and models used by the TEC Centers; and (4) the TEC Centers as a regional staff development network.

Sources of information for the evaluation included site visits to 11 of the 15 centers; telephone interviews; interviews with SDE and legislative staff; a survey of services provided in specific curriculum areas; and document analysis. In addition, information was obtained from a comprehensive data base in which individual centers record all training provided.

Major Findings and Implications

The organization of the findings reflects the emphases of the study. First, an overview of TEC Center training activities during 1983-84 is provided, followed by major sections on computer training and math and science staff development. These are followed by discussions on staff development strategies and delivery models and on organizational relationships involving the TEC Centers. Finally, a summary of major accomplishments and challenges of the TEC Centers is presented.

During the year, the TEC Centers offered a total of 2,466 courses representing a total of 28,711 training hours. There were 68,726 participants in these trainings. The greatest portion of TECC training activity (nearly two-thirds) was devoted to computer use. The area of instruction or teaching methodology accounted for the next largest portion (about 18 percent) of total TECC training activity in terms of number of training hours. In contrast, the curriculum area accounted for approximately 10 percent of total training time. See Table II for a summary of training activity in various content areas.

Insert Table II about here

There was considerable variation between the 15 TEC Centers in the level of effort devoted to each training area. For example, one center provided all of their training in the computer area, stating that curriculum and instruction were adequately covered by other staff development providers, especially in the county offices. Two other centers provided more training in instruction than in any other area. And one center divided its training activity approximately evenly among the areas of curriculum, instruction, and computer use.

Computer Training

The TEC Centers, which began with a strong technical emphasis through former Governor Brown's Investment in People program, have continued to provide services and training dominated by computer-related offerings. In terms of total TEC Center training, total hours and total number of participants, computer activity accounts for nearly two-thirds of the system output. The sheer numbers are impressive for a statewide system which was only beginning to organize itself in the fall of 1982: during the 1983-84 school year, 1,612 trainings were conducted consisting of 18,100 hours for 43,918 participants.

The clients for computer training include elementary teachers, secondary teachers, school administrators, classified staff, and other county and district staff. In addition to training activities, all centers provide consultation in computer software and hardware and general assistance to LEAs in instructional use of computers.

Shown in Table III are the figures for TEC Center trainings broken down by introductory level, advanced level, and training-of-trainers. Close to 90 percent of the training was offered in awareness-level or introductory programming. While it might appear that the need for awareness and introductory training should soon decrease, the center directors see no such trend in the next few years. As one director told us, "Computer training demand was limited by the number of staff/trainers. We trained 2,500 teachers in a six-month period--we could double that number with more staff." In the short run at least, the sheer number of teachers, the propensity for teachers to repeat an awareness-level training, and the ever changing microcomputer industry are factors which will keep awareness-level demand high. However, a more appropriate role for the TEC Centers would be to devote more of their resources to higher level computer training, shifting some of the responsibility for awareness training to districts and other training cadres.

Insert Table III about here

There is no doubt that the TEC Centers have scored a major accomplishment in that they have made great progress toward bringing computer awareness and skills to California teachers. As the showcase for computer activity in California education, the TEC Centers should continue to be start-of-the-art in hardware, software, and training. In order to remain at the forefront in technology training, the TEC Centers should no longer have awareness training

as their predominant offering in the computer area. The development of a strategic plan for TEC Center involvement in technology would be the beginning of a process to sift out the priorities in the computer area and to balance these with other staff development priorities.

Math and Science

One of the most striking findings is the relatively low level of activity in math and science training, not only from TEC Centers but from other education agencies as well. Between February 1983 and February 1984, the TEC Centers conducted an average of 8.5 math trainings representing an average of 130 hours of math training. The median number of individuals participating in math training at each center was 140. During the same period of time, the TEC Centers conducted an average of six science trainings representing an average of 27 hours of science training. The median number of individuals participating in science training at each center was 84.

These numbers are in contrast to the large number of trainings in the computer area. Center directors' estimates of math trainings as a percentage of total trainings hovered around 5 percent to 10 percent; in science, the figure was closer to 5 percent or less. TEC Center directors feel that more staff development in both math and science is needed. In response to a mail survey, 11 out of 14 directors said that there is a need for their centers to provide more math staff development than is currently offered. All 14 directors responding to the survey said that there is a need for their centers to provide more science staff development.

Reasons why the TEC Centers are providing less math and science staff development than is needed include lack of client demand, higher priority in other areas (especially computers), lack of qualified trainers, lack of resources, and insufficient time to develop a plan for math and science staff

development. While it is understandable that the TEC Centers have not done more, there is an expectation that they will begin to make a significant contribution to the overwhelming staff development needs in curriculum, especially math and science.

Instruction and Teaching Methodology Training

Training in instruction or teaching methodology includes pedagogy, instructional techniques, learning styles, and classroom management. The TEC Centers reported offering a total of 295 courses in instructional methodology during the year. These courses included 5,111 training hours with a total of 8,712 participants.

Training in instruction tends to be more intensive in terms of training time than training offered in other areas. The average number of hours per course was 17.3 for instruction, 11.2 for computer use, and 9.7 for curriculum.

Staff Development Strategies and Delivery Models

Staff development services provided by the TEC Centers include direct training and capacity-building services in support of site-based staff development programs. At the present time, a majority (79 percent) of TECC training is offered at an introductory or awareness level. Approximately one-half (51 percent) of all TECC training consists of a single session. TECC staff are caught between the pressure to do many things at a relatively superficial level on the one hand, and a recognition that the only way they can have a major impact is by leveraging their influence in various ways. Most centers have already conducted (or plan to conduct in the near future) some type of training-of-trainers activity; and there seems to be a consensus among the directors that this will be a major thrust of future TECC activity. In the long term, the centers will have to rely on trainer cadres and other leveraging activities to meet the needs within their regions.

While a few centers are exemplary insofar as attempting to direct a large portion of their resources toward empowering schools and districts to conduct their own staff development programs, capacity-building is the type of service most in need of augmentation by the TEC Centers overall. From the perspective of a regional staff development network, such as the TEC Centers, the optimal strategy--both in terms of impact and of resource management--is to assist schools and districts in developing staff development plans and linking them to the resources needed to carry out those plans, with the major impetus for staff development coming from the local agencies. For the TEC Centers to exert an optimal influence on school personnel, there must be a corresponding local commitment to staff development.

Organizational Relationships Involving the TEC Centers

The TEC Centers have a complex organizational and governance structure with various leadership roles and lines of authority shared by regional policy boards and executive boards, local education agencies (i.e., county offices of education designated to administer TEC Center budgets), and the Superintendent of Public Instruction. SB 813 also conveys a legislative intent that the TEC Centers will constitute a statewide staff development network and that within their own regions individual TEC Centers will take an active role in developing partnerships with other staff development providers, IHEs, and business and industry.

Most of the organizational relationships involving the TEC Centers were not explored in depth during this evaluation. However, some attention was devoted to examining relationships among the 15 TEC Centers and partnerships with business and industry and with IHEs.

Formal links between the TEC Centers and both IHEs and business and industry occur as the result of statutory language regarding composition of TEC

Center policy boards. A few centers have also launched imaginative efforts to establish relationships with IHEs and with business and industry. The best example of such a partnership with IHEs occurs with the California Math Project. However, in general, the link between the TEC Centers and these other sectors is not yet strong.

Major Accomplishments and Challenges of the TEC Centers

One purpose of this evaluation was to summarize the major accomplishments of the TEC Centers to date and to identify the challenges that the TEC Centers must meet. These judgments by the evaluators are based on a synthesis of all the information gathered for the study.

Major accomplishments. In less than two years, the TEC Centers have:

- o Become an effective regional staff development network
- o Adapted to a complex governance structure
- o Begun to implement delivery models that use the most effective staff development practices
- o Made great progress toward bringing computer awareness and skills to California teachers
- o Successfully assumed responsibility for administering AB 551 programs
- o Provided training to school staffs in instructional methodology, math, science, and other areas of the curriculum
- o Begun to create partnerships with IHEs, business, and industry

Challenges. The major challenges that the TEC Centers must meet are as follows:

- o Provide comprehensive staff development services with limited resources.
- o Respond to regional and statewide staff development needs over time.
- o Provide trainings that are more intensive and include follow-up.

- o Provide more services in support of site-based staff development programs.
- o Remain state-of-the-art in instructional uses of the computer and educational software.
- o Provide more computer training that is integrated with curriculum.
- o Increase services in math, science, and other areas of the curriculum.
- o Increase partnerships with IHEs and with business and industry.

Not surprisingly, some of the significant accomplishments of the TEC Centers are closely related to the challenges that they must now meet. As relatively new agencies, the TEC Centers have made a commendable beginning in becoming an effective regional network and in providing many of the staff development resources and services that comprise their broad mission. They are already a high-payoff investment in educational reform. Their challenges for the future are to increase the breadth and depth of their services, to the extent that resources and the state-of-the-art permit, and to strengthen their role as major staff development providers in California.

The educational reform movement in California is currently placing great emphasis on strengthening the curriculum. Through SB 813 and current priorities of Superintendent Honig and the SDE, the TEC Centers are being pressed to become part of this curriculum improvement effort by providing more staff development resources combining content and instructional methodology in all areas of the curriculum. Given the relatively minor role that the TEC Centers have had in curriculum so far, accomplishing this will require a significant change of direction. The recent effort by many TEC Centers to offer more computer trainings that are integrated with content is a natural bridge to more staff development in curriculum.

Support and Resources Needed to Meet Challenges

In order to meet these challenges, the TEC Centers should consider increasing their efforts in certain areas by redirecting a portion of their total allocation to such activities, especially curriculum and capacity-building services. It was evident during 1983-84 that the TEC Centers needed additional funds to accomplish their mission. The Legislature responded to this need and appropriated an additional $5.5 million for 1984-85, giving the TEC Center program a total allocation of $11.78 million. While the mission is so large that it will always stretch resources to provide comprehensive staff development services to California schools, the new allocation will enable the young TEC Center program to grow substantially. In the judgment of the evaluators, the following additional support and resources are now needed to enable the TEC Center program to meet current challenges.

- o Strengthening of the TEC Center network through:
  - A comprehensive planning process for the network linked to assessment of needs and priorities in each region
  - A closer cooperative relationship between the SDE and the TEC Centers
  - An improved data base to document services and trainings
- o Recognition by the Legislature and others of the danger of overburdening the TEC Centers
- o Action by the Legislature and others to increase incentives for staff development

Table I

PROFILES OF THE 15 TEC CENTERS

TECC region	Number of professional staff (in FTE)	General fund support for 1983-84	Number of counties	Number of teachers (approximate)
1	2.80	$ 227,845	2	1,025
2	4.10	331,325	9	3,824
3	3.00	315,576	6	7,465
4	3.80	332,544	11	10,565
5	2.50	228,046	1	2,580
6	3.05	323,279	2	12,257
7	2.00	312,770	7	8,173
8	3.00	378,833	5	16,985
9	5.58	298,497	3	7,260
10	4.40	313,475	3	8,019
11	4.00	308,068	3	4,046
12	14.40	1,516,642	1	50,925
13	4.00	413,578	2	12,769
14	4.50	352,186	1	13,721
15	4.00	390,968	2	14,144

Table II

SUMMARY OF TEC CENTER TRAINING, 1983-84

Training activity	Number of workshops	Total number of sessions	Total number of hours	Total number of participants
Curriculum	292	665	2,839	9,047
Instruction	295	986	5,111	8,712
Instructional supervision	54	232	1,298	1,137
Management	142	237	1,095	3,652
Computer use	1,612	7,465	18,102	43,918
Other	69	80	264	2,222
Total*	2,466	9,666	28,711	68,726

*Totals may differ slightly from the sum of the columns due to missing classification information in the TEC Center documentation data base.

Table III

TEC CENTER COMPUTER TRAININGS, 1983-84

Training activity	Number of workshops	Total number of sessions	Total number of hours	Total number of participants
Introductory (awareness)/ introductory programming	1,408	6,253	15,155	37,972
Advanced programming/ applications	168	1,062	2,193	5,101
Training-of-trainers	31	144	735	761
Total* computer use	1,612	7,465	18,102	43,918

*Totals may differ slightly from the sum of the columns due to missing classification information in the TEC Center documentation data base.